

# Apical Axillary Thoracotomy

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**T**he apical axillary thoracotomy is a muscle sparing and cosmetically appealing incision.<sup>1</sup> It provides access to the apex of the lung, the upper ribs, and the hemithorax posteriorly. Because of these attributes, it

was once, for many, the preferred “minimally invasive” approach for the surgical treatment of recurrent primary spontaneous pneumothoraces or high thoracic sympathectomies.<sup>2,3</sup>

## SURGICAL TECHNIQUE

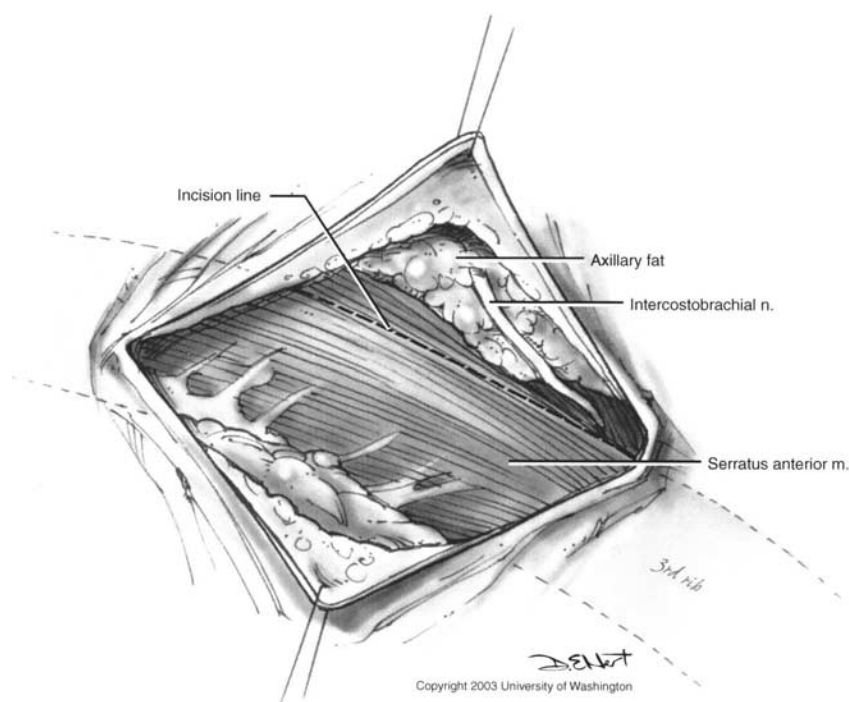
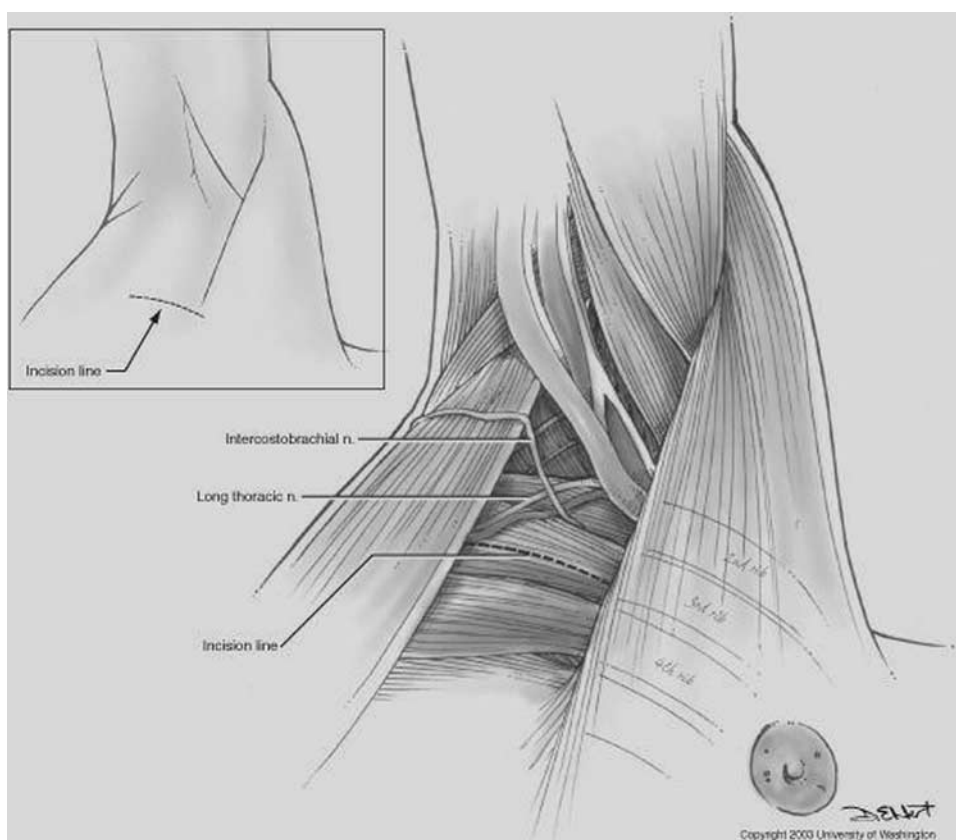


**1** Because of the limited exposure provided by apical axillary thoracotomy, double lumen intubation is strongly recommended when working through this incision. The patient is positioned in a lateral decubitus with the ipsilateral axilla exposed. This position can be accomplished by abducting the shoulder at or just above 90 degrees and flexing the elbow at 90 degrees by strapping it on a padded, rigid bar across the head of the table.

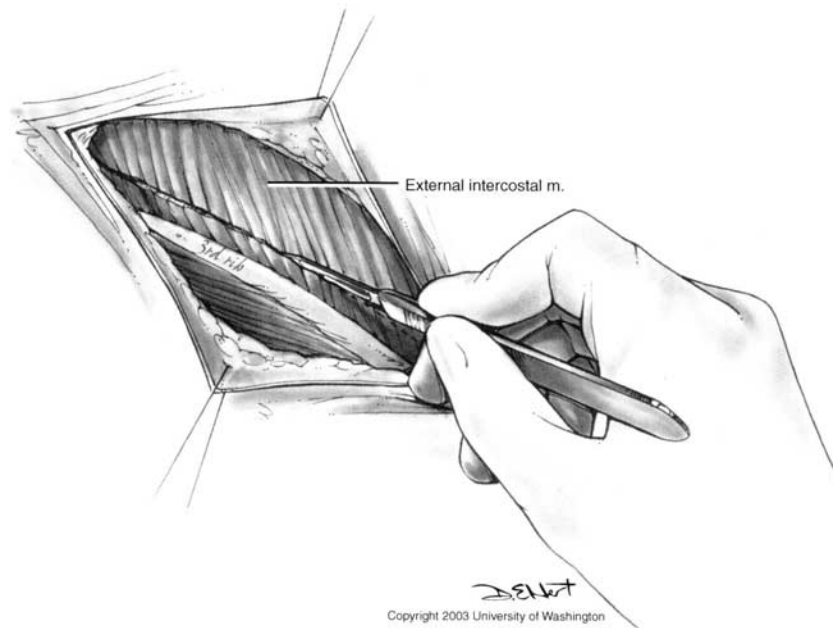


**2** An alternative approach is to elevate the extended arm at 90 degrees above the head by placing it in a traction-pulley system with a 1-lb weight. The latter option frees up the field anteriorly and potentially offers better access to the incision for the operator situated on the anterior side of the table.

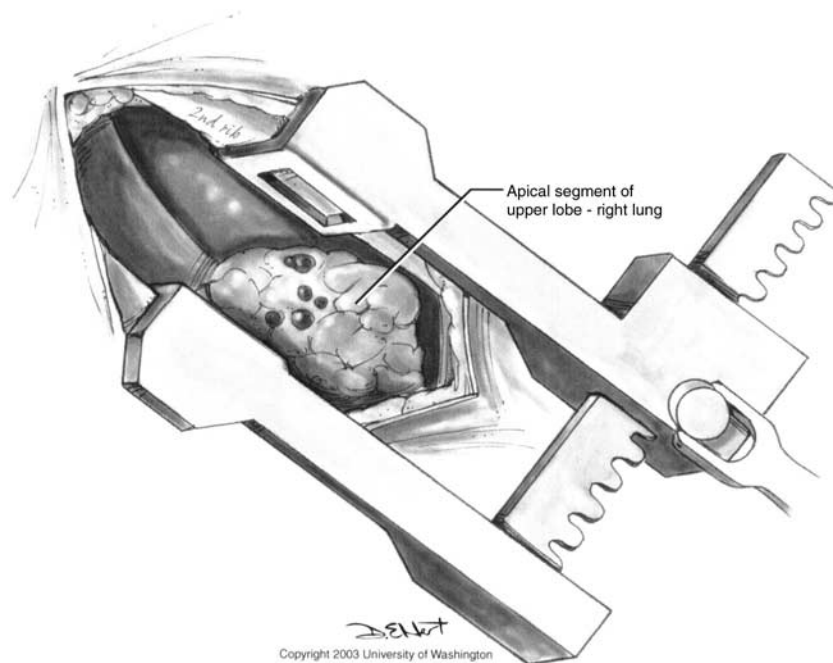
**3** An incision is made just under the shaven, axillary hairline and can be curvilinear or oblique paralleling the slope of the underlying ribs. The oblique incision may be preferable when operating on patients with “vertical” ribs. The incision extends from the posterior aspect of the pectoralis major in the front to the anterior aspect of the latissimus dorsi in the back.



**4** The axillary fascia is incised, and the underlying axillary fat is bluntly elevated into the axilla, exposing the serratus anterior muscle and its overlying fascia, carefully preserving the intercostobrachial nerve that can usually be seen at this point, in the superior mid to posterior aspect of the field as its major trunk arises from the second intercostal nerve and travels posteriorly. The long thoracic nerve runs within the serratus anterior fascia, posteriorly, behind and parallel to the latissimus dorsi muscle (Fig 3). The fibers of the serratus anterior muscle are incised for the length of the incision, paralleling the line of the third rib. The latter can be identified either by locating the first rib as one passes a finger along the serratus anterior muscle superiorly and counting down to the third rib, or by using the intercostobrachial nerve as a point of reference along the inferior border of the second rib. Dividing the serratus anterior muscle too far posteriorly can potentially cause injury to the long thoracic nerve.



**5** Division of the intercostal muscles along the upper border of the third or fourth rib, or a subperiosteal excision of the third rib allows access to the pleural space that is then entered under direct vision.



**6** A small, self-retaining retractor is then placed. Further division of the intercostal muscles from within the chest, both anterior and posterior to the incision, may facilitate widening the intercostal space opening.



**7** The use of modern day endoscopic staplers permits stapled resection of lung tissue through this incision without the need to spread the ribs apart significantly. Both the apical segment of the upper lobe and to the superior segment of the lower lobe can usually be easily accessed through this incision in the absence of significant pleural adhesions.

Before closure, a chest tube is inserted through a separate stab incision along the mid axillary line, inferiorly. Intercostal nerve blocks should be performed through the incision and the intercostal space reapproximated with 2 or 3 pericostal sutures. The serratus anterior muscle is sutured, as are the axillary fascia and the skin.

## CONCLUSION

The apical axillary thoracotomy remains a minimally traumatic and cosmetically appealing incision, particularly in the tall and usually thin population of patients we see with apical primary spontaneous pneumothoraces and in young patients with essential hyperhidrosis. However, the exposure it provides to the rest of the thoracic cavity is limited. Ironically, this incision has largely been replaced by video-assisted thoracic surgery procedures that offer an even less invasive approach to these 2 types of problems, with better visualization and exposure.<sup>4-6</sup>

## REFERENCES

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